

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

App. No.: 10/652,643 Att'y Docket: EH-10592 (02-648)  
Filing Date: August 28, 2003 Conf No.: 1822  
Inventor(s): Steven J. Bullied et al. Group Art Unit: 1725  
Assignee: United Technologies Corporation Examiner: Kuang Y. Lin  
Title: INVESTMENT CASTING

Correspondence Address:  
Customer Number 34704

DECLARATION UNDER 37 CFR § 1.132

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

The undersigned, Steven J. Bullied, declares as follows:

1. I am a coinventor of the present application.
2. I have 8 years of experience in casting manufacturing of turbine engine components and related engineering and 6 years of additional aerospace engineering experience. I received BS in Mechanical Engineering from Worcester Polytechnic Institute and an MS in Manufacturing Engineering from Boston University.
3. I have read and understand and am familiar with the disclosures of U.S. Patent 4,702,298 of Blazek and 4,170,256 and 4,066,166 of Blazek et al. as well as U.S. Patent Application Publication 2005/0045301 A1 (the present application).
4. I have read the amended claims of the present application in an amendment dated May 23, 2005.
5. It is inherent from the drawings, specification text, and claims of the '301 publication that the blades identified in claim 1 are formed separately from any disk to which they are to be

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attached. One of ordinary skill in the art (e.g., casting of aircraft engine components) would find this readily apparent. One of ordinary skill in the art would know of disk manufacturing techniques (typically forging).

6. One of ordinary skill in the art would understand that the particular manufacturing technique for any associated disk is irrelevant to claim 1.

7. One of ordinary skill in the art would find no ambiguity in claim 1 as amended in the amendment of May 23, 2005. Specifically, one of ordinary skill in the art would not read such claim 1 as requiring that the disk be simultaneously cast in a separate mold cavity. As noted above, forging is a more typical separate forming process. One of ordinary skill would understand that the disk is a separate component to which the blade is assembled.

8. The subject matter of claims 1, 2, 4, and 8-10 is not found in the Blazek or Blazek et al. patents and would not have been an obvious variation theron. The Blazek and Blazek et al. patents disclose a casting of a single part using a multi-section shell. For example, the Blazek patent addresses assembly and alignment issues for the shell sections (these issues are critical when using multiple sections to cast a single part).

9. Examples of Blazek/Blazek et al. cast parts are diffuser cases, nozzle rings, bearing supports, and fan frames. Some of these components may have fixed vane airfoils. They are not blades. It is worth note that, when referring to an airfoil, the airfoil may have ends identified as a root and a tip. When part of a blade, the airfoil root is distinct from the blade root. The blade root (sometimes identified as a fir tree due to its convoluted section) may, for example, depend from the underside of a platform whereas the airfoil root will be at the outside of such platform.

10. One of ordinary skill in the art would not regard the Blazek/Blazek et al. teachings as applying to the manufacture of blades as is stated in independent claim 1.

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11. One of ordinary skill in the art would similarly not regard the Blazek/Blazek et al. teachings as applying to the formation of separate parts, generally (not limited to blades), as is identified in claim 8.

12. It is worth note that a typical blade manufacturing technique has long involved assembling a cluster of patterns and shelling the assembled patterns. This technique predated the Blazek/Blazek et al. patents and continues. Thus the art has not adapted any teachings of Blazek/Blazek et al. or other sources to produce the presently-claimed invention of claims 1 and 8 and the claims dependent thereon. Clearly continuation of the existing techniques involves teaching away from any such adaptation of Blazek/Blazek et al.

13. Accordingly, one of ordinary skill in the art, even if aware of Blazek/Blazek et al. would not have applied the sections of Blazek/Blazek et al. to produce the claimed pluralities of blades or other parts of claims 1 and 8 and their dependent claims.

14. Similarly, the claimed invention of claims 3, 5-7, and 11-20 would not have been obvious over the Blazek or Blazek et al. patents.

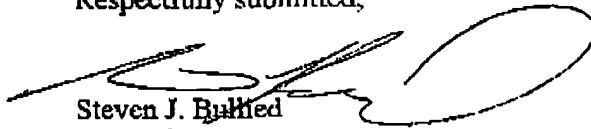
15. Independent claims 13, 19, and 20 (and dependent claim 6) all identify the positioning of filters in a feeder conduit of a distribution manifold. Although filters are known in the art, there is no suggestion for this claimed general positioning let alone the more specific positioning identified in several of the claims.

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16. The undersigned declares further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,



Steven J. Bulkley  
September 27, 2005

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